
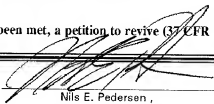


FORM PTO 1000 (REV 5-99)		US DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. §371		ATTORNEY DOCKET NUMBER 2001-1757A	
		U.S. APPLICATION NO. 097980580	
International Application No. PCT/JP00/03628	International Filing Date June 2, 2000	Priority Date Claimed June 3, 1999	
Title of Invention INFORMATION RECORDING/REPRODUCTION DEVICE AND INFORMATION RECORDING/REPRODUCTION METHOD			
Applicant(s) For DO/EO/US Eiji MASUDA			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. §371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. §371. 3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. §371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. §371(b) and PCT Articles 22 and 39(1). 4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. ATTACHMENT A 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. §371(c)(2)) a. <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau. ATTACHMENT B c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US) 6. <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. §371(c)(2)). ATTACHMENT C 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. §371(c)(3)). a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19. 9. <input checked="" type="checkbox"/> An (unexecuted) oath or declaration of the inventor(s) (35 U.S.C. §371(c)(4)). ATTACHMENT D 10. <input checked="" type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. §371(c)(5)). ATTACHMENT E Items 11. to 14. below concern other document(s) or information included: 11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. ATTACHMENT F <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 14. <input checked="" type="checkbox"/> Other items or information: International Search Report - ATTACHMENT G ; and Notification Concerning Submission or Transmittal of Priority Document - ATTACHMENT H			

U.S. APPLICATION NO. (Claims, see 37 CFR 1.51) NEW 097-980580		INTERNATIONAL APPLICATION NO. PCT/JP00/03628		ATTORNEY'S DOCKET NO. 2001-1757A	
15. [X] The following fees are submitted				CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee nor international search fee paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00 International Search Report has been prepared by the EPO or JPO \$ 890.00 International preliminary examination fee not paid to USPTO but international search paid to USPTO \$ 740.00 International preliminary examination fee paid to USPTO but claims did not satisfy provisions of PCT Article 33(1)-(4) \$ 690.00 International preliminary examination fee paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$ 100.00					
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$890.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
Claims	Number Filed	Number Extra	Rate		
Total Claims	12 -20 =		X \$18.00	\$	
Independent Claims	3 -3 =		X \$84.00	\$	
Multiple dependent claim(s) (if applicable)			+ \$280.00	\$	
TOTAL OF ABOVE CALCULATIONS =				\$890.00	
[] Small Entity Status is hereby asserted. Above fees are reduced by 1/2.				\$	
SUBTOTAL =				\$890.00	
Processing fee of \$130.00 for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+ \$	
TOTAL NATIONAL FEE =				\$890.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40 per property +				\$	
TOTAL FEES ENCLOSED =				\$890.00	
				Amount to be refunded	\$
				Amount to be charged	\$
a. [X] A check in the amount of \$890.00 to cover the above fees is enclosed. A duplicate copy of this form is enclosed. b. [] Please charge my Deposit Account No. 23-0975 in the amount of \$_____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 23-0975.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
19. CORRESPONDENCE ADDRESS					
 000513 PATENT TRADEMARK OFFICE			By:  Nils E. Pedersen, Registration No. 33,145 WENDEROTH, LIND & PONACK, L.L.P. 2033 "K" Street, N.W., Suite 800 Washington, D.C. 20006-1021 Phone: (202) 721-8200 Fax: (202) 721-8250 December 3, 2001		

THE COMMISSIONER OF PATENT AND TRADEMARK OFFICE
 RECEIVED IN THE
 DEPOSIT OF FEES
 097-980580-23-0975

[CHECK NO. 47776]

[2001_1757A]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
Eiji MASUDA : Attn: BOX PCT
Serial No. NEW : Docket No. 2001-1757A
Filed December 3, 2001 :

INFORMATION RECORDING/
REPRODUCTION DEVICE AND
INFORMATION RECORDING/
REPRODUCTION METHOD
[Corresponding to PCT/JP00/03628
Filed June 2, 2000]

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents,
Washington, DC 20231

Sir:

Prior to examination of the above-referenced U.S. patent application please amend the application as follows:

IN THE CLAIMS

Please amend the claim as follows:

7. (Amended) The information recording/reproduction method as defined in Claim 4, wherein
the data is a DV signal.

Please add the following new claims:

9. The information recording/reproduction method as defined in Claim 5, wherein
the data is a DV signal.

10. The information recording/reproduction method as defined in Claim 6, wherein the data is a DV signal.

11. The information recording/reproduction method as defined in Claim 9, wherein the DV signal is treated in units of frames.

12. The information recording/reproduction method as defined in Claim 10, wherein the data is a DV signal.

REMARKS

The present Preliminary Amendment is submitted to delete the multiple dependency of the claim, thereby placing such claim in condition for examination and reducing the required PTO filing fee.

Attached hereto is a marked-up version of the changes made to the claim by the current Preliminary Amendment. The attached page is captioned "**Version With Markings to Show Changes Made**"

Respectfully submitted,

Eiji MASUDA

By 

Nils E. Pedersen
Registration No. 33,145
Attorney for Applicant

NEP/krl
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
December 3, 2001

THIS DOCUMENT IS NOT TO BE
REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS
ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING,
OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT
PERMISSION OF THE PATENT AND TRADEMARK OFFICE
ACCOUNT NO. 23-0876

9/pab

1

DESCRIPTION

INFORMATION RECORDING/REPRODUCTION DEVICE
AND INFORMATION RECORDING/REPRODUCTION METHOD

TECHNICAL FIELD

The present invention relates to an information recording/reproduction device and an information recording/reproduction method and, more particularly, to those for recording or reproducing information on a disk information carrier.

BACKGROUND ART

A disk drive which records or reproduces an image signal of a DV (Digital Video) format on/from a disk is now about to come under review. In the disk drive, when successive image data are recorded or reproduced, these data are recorded or reproduced on/from a disk surface while switching the head and the disk in the order of LBA (Logical Block Address) from the outer circumference of the disk toward the inner circumference or from the inner circumference toward the outer circumference.

At this time, a rotation wait due to a command over-head or a rotation wait for a retrieval due to an error may occur during recording or reproduction, thereby taking time for recording or reproduction. In this case, when a serial DV signal is recorded or reproduced, if one frame of image cannot

be recorded or reproduced within 33.34ms which is the recording or reproduction time for one frame, this frame cannot be recorded or reproduced, resulting in a frame dropout.

Figure 7 is a block diagram illustrating a conventional information recording/reproduction device.

In the conventional information recording/reproduction device, as shown in figure 7, when a DV signal from a DV device 7 inputted through a 1394 interface is recorded on a disk 4, data to be recorded is modulated by a disk controller 2 and is recorded on the disk 4 by a recording/reproduction circuit 3.

Figure 8 is a flowchart illustrating a conventional DV signal recording method, figure 9(a) is a diagram illustrating the state where a DV signal is recorded on a disk surface by the conventional DV signal recording method, and figure 9(b) is a diagram illustrating the execution time in the case where a rotation wait occurs due to over-head of a command when the DV signal is recorded on the disk surface by the conventional DV signal recording method.

As shown in figure 8, in the conventional DV signal recording method, initially, a recording sector unit NB is set to 235 as the number of sectors in one frame (Step S20), and a LBA(S) as a recording start LBA is set (Step S21). Next, the number of frames Frame(R) to be recorded is set (Step S22), and then recording is started (Step S23). However, a one-rotation wait occurs due to over-head of a command (Step S24), and

recording is started from a recording start sector position after the one-rotation wait (Step S25). This operation is repeated to reach the set number of recording frames (Steps S26 to S27).

As described above, in the conventional device and method for information recording or reproduction, when a serial DV signal is recorded or reproduced, a one-rotation wait always occurs due to over-head of a command, thereby taking an additional recording/reproduction execution time for one rotation every time a command is issued. Further, the recording/reproduction execution time becomes longer when a retrieval due to an error is carried out. When the recording/reproduction execution time becomes longer and one frame of image cannot be recorded or reproduced within 33.34ms which is the recording/reproduction time for one frame, this frame is not recorded or reproduced, resulting in a frame dropout.

The present invention is made to solve the above-mentioned problems and has for its object to provide an information recording/reproduction device and an information recording/reproduction method, which can reduce deterioration (prolongation) of recording/reproduction execution time by removing a rotation wait caused by over-head of a command or retrieval due to an error, thereby avoiding that a frame is not recorded or reproduced at recording or reproduction and that a frame dropout occurs.

DISCLOSURE OF THE INVENTION

According to the present invention, an information recording/reproduction device comprises an interface for exchanging data with an external device, a disk controller for modulating/demodulating data to record or reproduce the data onto a disk as an information recording medium, a memory for temporarily storing data to be recorded on the disk or data reproduced from the disk, a recording/reproduction circuit for recording data on the disk or reproducing data from the disk, and a CPU for controlling the disk controller; wherein, when recording or reproduction of data is to be performed, initially, recording or reproduction of data is performed from a position on the disk where data recording or reproduction becomes possible with a command being issued, followed by recording or reproduction of data corresponding to the subsequent positions, and thereafter, recording or reproduction of data corresponding to each position of a part on the disk where data recording or reproduction has not been performed, is performed. Therefore, deterioration of recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrieval due to an error, can be reduced, whereby the recording/reproduction execution time can be reduced.

According to the present invention, in the above-described information recording/reproduction device, the data is a DV (Digital Video) signal. Therefore, deterioration of

recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrieval due to an error, occurring when recording or reproducing a DV signal, can be reduced, whereby the recording/reproduction execution time can be reduced.

According to the present invention, in the above-described information recording/reproduction device, when recording or reproduction of a DV signal is to be performed, initially, the DV signal is treated in units of frames, and recording or reproduction of a DV signal is performed from a LBA on the disk where recording or reproduction of the DV signal becomes possible with a command being issued, followed by recording or reproduction of DV signals corresponding to the subsequent LBAs, and thereafter, recording or reproduction of a DV signal corresponding to each LBA of a part on the disk where DV signal recording or reproduction has not been performed, is performed. Therefore, deterioration of recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrieval due to an error, can be reduced more efficiently, and frame dropouts can also be prevented more efficiently, as compared with the case where the DV signal is treated in units of sectors.

According to the present invention, in an information recording/reproduction method for recording or reproducing data on/from a disk as an information recording medium, initially,

recording or reproduction of data is performed from a LBA on the disk where recording or reproduction of data becomes possible with a command being issued and tracking being completed, followed by recording or reproduction of data corresponding to the subsequent LBAs, and thereafter, recording or reproduction of data corresponding to each LBA of a part on the disk where data recording or reproduction has not been performed, is performed. Thereby, deterioration of recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrial due to an error, can be reduced, whereby the recording/reproduction execution time can be reduced.

According to the present invention, in an information recording/reproduction method for recording or reproducing data on/from a disk as an information recording medium, a LBA from which recording or reproduction of data is to be started is previously decided to be a value larger than a LBA at which recording or reproduction of data becomes possible with a command being issued, and recording or reproduction of data is performed from a LBA on the disk from which recording or reproduction of data is to be started with a command being issued, followed by recording or reproduction of data corresponding to the subsequent LBAs, and thereafter, recording or reproduction of data corresponding to each LBA of a part on the disk where data recording or reproduction has not been

performed, is performed. Therefore, a device and a method for detecting a LBA at which recording or reproduction becomes possible with a command being issued and tracking being completed, are dispensed with, and thus, deterioration of recording/ reproduction execution time due to a rotation wait which is caused by a command over-head or a retrial due to an error, can be reduced by a simpler construction, whereby the recording/ reproduction execution time can be reduced.

According to the present invention, in the above-described information recording/reproduction method, the LBA from which recording or reproduction of data is started, is previously decided separately for data recording and data reproduction. Therefore, the recording/reproduction execution time can be set respectively for recording and reproduction, and thus, deterioration of recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrial due to an error, can be reduced respectively for recording and reproduction, whereby the overall (total) recording/reproduction execution time can be reduced.

According to the present invention, in the above-described information recording/reproduction method, the data is a DV signal. Therefore, deterioration of recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrial due to an error, occurring when recording or reproducing a DV signal, can be reduced, whereby

the recording/reproduction execution time can be reduced.

According to the present invention, in the above-described information recording/reproduction method, the DV signal is treated in units of frames. Therefore, deterioration of recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrial due to an error, can be reduced more efficiently, and frame dropouts can also be prevented more efficiently, as compared with the case where the DV signal is treated in units of sectors.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 is a block diagram illustrating an information recording/reproduction device according to a first embodiment of the present invention, figure 2 is a diagram illustrating the constitution of a frame memory of the information recording/reproduction device according to the first embodiment of the invention, figure 3 is a flowchart illustrating a DV signal recording method according to the first embodiment of the invention, figure 4 is a flowchart illustrating a DV signal recording method according to a second embodiment of the present invention, figure 5 is a flowchart illustrating an information recording method according to a third embodiment of the present invention, figure 6(a) is a diagram illustrating the state where a DV signal is recorded on a disk surface by the DV signal recording method according to the first

embodiment of the invention, and figure 6(b) is a diagram illustrating the execution time when the DV signal is recorded on the disk surface by the DV signal recording method according to the first embodiment of the invention.

Further, figure 7 is a block diagram illustrating a conventional information recording/reproduction device, figure 8 is a flowchart illustrating a conventional DV signal recording method, figure 9(a) is a diagram illustrating the state where a DV signal is recorded on a disk surface by the conventional DV signal recording method, and figure 9(b) is a diagram illustrating the execution time in the case where a rotation wait occurs due to a command over-head, when the DV signal is recorded on the disk surface by the conventional DV signal recording method.

BEST MODE TO EXECUTE THE INVENTION

Hereinafter, preferred device and method for information recording or reproduction according to the present invention will be described in detail with reference to the figures. In the figures, constituents having the same function will be denoted by the same reference numerals.

(Embodiment 1)

Figure 1 is a block diagram illustrating an information recording/reproduction device according to a first embodiment of the present invention, and figure 2 is a diagram

illustrating the constitution of a frame memory included in the information recording/reproduction device according to the first embodiment of the invention.

As shown in figure 1, this information recording/reproduction device includes a 1394 interface 1 which receives a serial signal from a DV device 7; a disk controller 2 which converts the serial signal into a parallel signal and temporarily stores the parallel signal in a frame memory 6 so as to control the signal flow or modulate/demodulate the DV signal for recording or reproducing it onto a disk 4 as an information recording medium; a recording/reproduction circuit 3 which records or reproduces the DV signal on/from the disk 4; and a CPU 5 which controls the disk controller 2. When the DV signal from the DV device 7 inputted through the 1394 interface 1 is recorded on the disk 4, the serial DV signal is once converted into the parallel signal by the disk controller 2, and thereafter, recording data for one frame (235 sectors) are stored in the frame memory 6 in a format as shown in figure 2 where sector numbers are assigned to the respective sectors. The stored recording data are modulated by the disk controller 2 and then recorded on the disk 4 by the recording/reproduction circuit 3.

Figure 3 is a flowchart illustrating a DV signal recording method according to the first embodiment of the invention, figure 6(a) is a diagram illustrating the state where a DV

signal is recorded on a disk surface by the DV signal recording method according to the first embodiment of the invention, and figure 6(b) is a diagram illustrating the execution time when the DV signal is recorded on the disk surface by the DV signal recording method according to the first embodiment of the invention.

As shown in figure 3, in the DV signal recording method according to the first embodiment, initially, a recording sector unit NB is set to 235 as the number of sectors in one frame (Step S1), and a LBA(S) as a recording start LBA is set (Step S2). After the number of recording frames Frame(R) is set (Step S3), a recording start sector in a recording frame (235 sectors) is previously decided at a sector position RS where recording can be started (Step S4), and recording is started from the recording start sector position (Steps S5 to S6), and thereafter, sectors prior to the recording start sector, which have not been recorded, are recorded (Steps S7 to S8). This operation is repeated to reach the set number of recording frames (Steps S9 to S11).

As described above, the device and method for information recording or reproduction according to the first embodiment of the invention can reduce the execution time (refer to figure 6(b)) when the DV signal is recorded on the disk surface, as compared with the execution time in the case where a rotation wait occurs when the DV signal is recorded on the disk surface

0000500-070102

by the conventional DV signal recording method.

(Embodiment 2)

An information recording/reproduction device according to a second embodiment of the present invention has the same construction as the information recording/reproduction device according to the first embodiment shown in figures 1 and 2.

Figure 4 is a flowchart illustrating a DV signal recording method according to the second embodiment of the invention.

As shown in figure 4, in the DV signal recording method according to the second embodiment, initially, a recording sector unit NB is set to 235 as the number of sectors in one frame (Step S1), and a LBA(S) as a recording start LBA is set (Step S2). After the number of recording frames Frame(R) is set (Step S3), a sector position RS of a recording start sector in a recording frame (235 sectors) is set to 0 (Step S12), the sector position RS is incremented (Step S13), and it is judged whether tracking is completed or not (Step S14). When tracking has been completed, recording is performed from the recording start position (Steps S5 to S6), and thereafter, sectors prior to the recording start sector, which have not been recorded, are recorded (Steps S7 to S8). This operation is repeated to reach the set number of recording frames (Steps S9 to S11).

As described above, the device and method for information recording or reproduction according to the second embodiment start recording from the point where tracking is completed,

whereby deterioration of recording/reproduction execution time due to a rotation wait which is caused by a command over-head or a retrial due to an error, can be reduced, resulting in reduced recording/reproduction execution time.

(Embodiment 3)

An information recording/reproduction device according to a third embodiment of the present invention has the same construction as the information recording/reproduction device according to the first embodiment shown in figures 1 and 2.

Figure 5 is a flowchart illustrating a DV signal recording method according to the third embodiment of the invention.

As shown in figure 5, in the DV signal recording method according to the third embodiment, initially, a recording sector unit NB is set to NB0 (Step S15), and a LBA(S) as a recording start LBA is set (Step S2). After the number of recording frames Frame(R) is set (Step S3), a sector position RS of a recording start sector in a recording frame (235 sectors) is set to 0 (Step S12), the sector position RS is incremented (Step S13), and it is judged whether tracking is completed or not (Step S14). When tracking has been completed, recording is performed from the recording start position (Steps S5 to S6), and thereafter, sectors prior to the recording start sector, which have not been recorded, are recorded (Steps S7 to S8). This operation is repeated to reach the set number of recording frames (Steps S9 to S11).

As described above, the device and method for information recording or reproduction according to the third embodiment can reduce deterioration of the recording execution time due to a rotation wait which is caused by a command over-head or a retrieval due to an error, whereby the recording execution time can be reduced, even when a signal to be recorded on the disk is different from a DV signal and the number of sectors is different from that of the DV signal.

While the case of performing recording is described for the devices and methods of information recording and reproduction according to the first to third embodiments, dropout of a frame to be reproduced, which results from a rotation wait caused by a command over-head or a retrieval due to an error, can be prevented also in the case of performing reproduction, and the overall (total) recording/reproduction execution time of the information recording/reproduction device can be reduced by employing the recording/reproduction method of the present invention for both of recording and reproduction.

APPLICABILITY IN INDUSTRY

As described above, an information recording/reproduction device and an information recording/reproduction method according to the present invention are available as a disk drive which records or reproduces an image signal of a DV (Digital Video) format on a disk.

CLAIMS

1. An information recording/reproduction device comprising: an interface for exchanging data with an external device, a disk controller for modulating/demodulating data to record or reproduce the data onto a disk as an information recording medium, a memory for temporarily storing data to be recorded on the disk or data reproduced from the disk, a recording/reproduction circuit for recording data on the disk or reproducing data from the disk, and a CPU for controlling the disk controller, wherein

when recording or reproduction of data is to be performed, initially, recording or reproduction of data is performed from a position on the disk where data recording or reproduction becomes possible with a command being issued, followed by recording or reproduction of data corresponding to the subsequent positions, and thereafter, recording or reproduction of data corresponding to each position of a part on the disk where data recording or reproduction has not been performed, is performed.

2. The information recording/reproduction device as defined in Claim 1, wherein

the data is a DV (Digital Video) signal.

00000500-0300100

3. The information recording/reproduction device as defined in Claim 2, wherein

when recording or reproduction of a DV signal is to be performed, initially, the DV signal is treated in units of frames, and recording or reproduction of a DV signal is performed from a LBA on the disk where recording or reproduction of the DV signal becomes possible with a command being issued, followed by recording or reproduction of DV signals corresponding to the subsequent LBAs, and thereafter, recording or reproduction of a DV signal corresponding to each LBA of a part on the disk where DV signal recording or reproduction has not been performed, is performed.

4. An information recording/reproduction method for recording or reproducing data on/from a disk as an information recording medium, wherein

initially, recording or reproduction of data is performed from a LBA on the disk where recording or reproduction of data becomes possible with a command being issued and tracking being completed, followed by recording or reproduction of data corresponding to the subsequent LBAs, and thereafter, recording or reproduction of data corresponding to each LBA of a part on the disk where data recording or reproduction has not been performed, is performed.

a LBA from which recording or reproduction of data is to be started is previously decided to be a value larger than a LBA at which recording or reproduction of data becomes possible with a command being issued, and recording or reproduction of data is performed from a LBA on the disk from which recording or reproduction of data is to be started with a command being issued, followed by recording or reproduction of data corresponding to the subsequent LBAs, and thereafter, recording or reproduction of data corresponding to each LBA of a part on the disk where data recording or reproduction has not been performed, is performed.

6. The information recording/reproduction method as defined in Claim 5, wherein

the LBA from which recording or reproduction of data is started, is previously decided separately for data recording and data reproduction.

7. The information recording/reproduction method as defined in any of Claims 4 to 6, wherein

the data is a DV signal.

8. The information recording/reproduction method as defined in Claim 7, wherein

the DV signal is treated in units of frames.

20000000.000000

Fig. 1

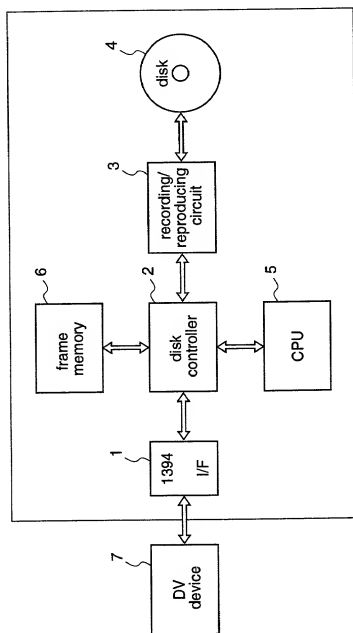


Fig.2

recording or reproduction order	sector No.	data
201	sector 1	512Bytes
202	sector 2	512Bytes
203	sector 3	512Bytes
234	sector 34	512Bytes
235	sector 35	512Bytes
①	sector 36	512Bytes
2	sector 37	512Bytes
198	sector 233	512Bytes
199	sector 234	512Bytes
200	sector 235	512Bytes

※DV signal ; 1 frame=120KBytes (235 sectors)
1 sector=512Bytes

Fig.3

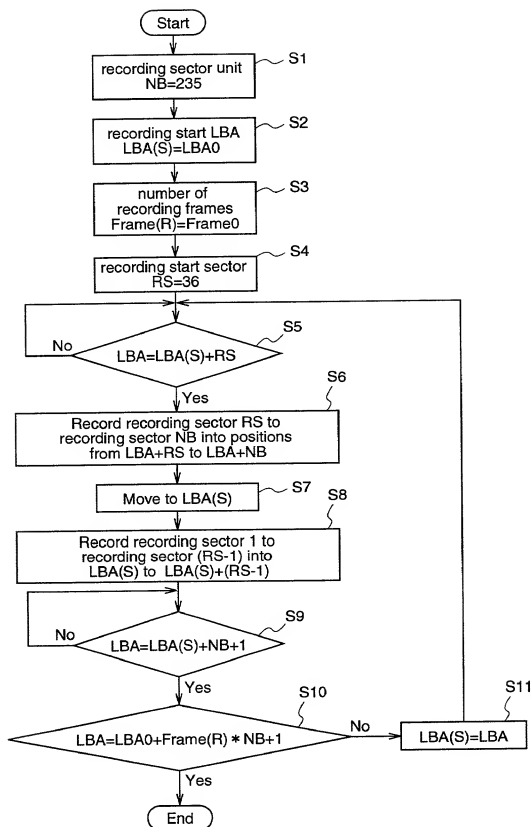


Fig.4

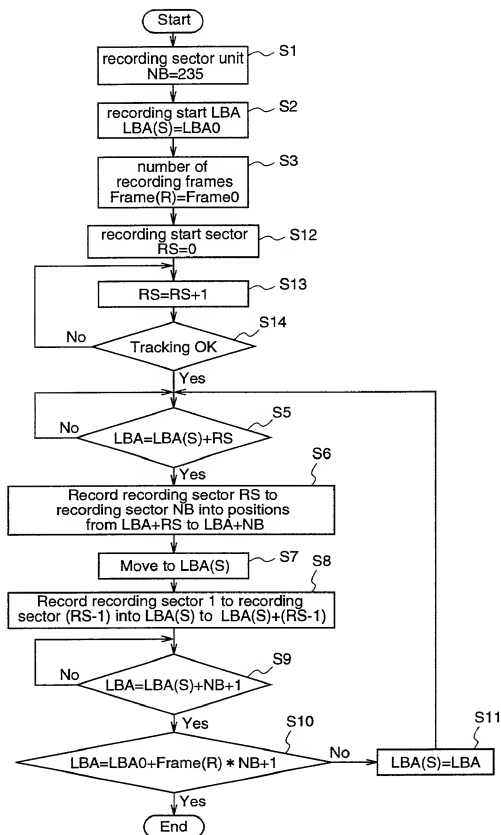


Fig.5

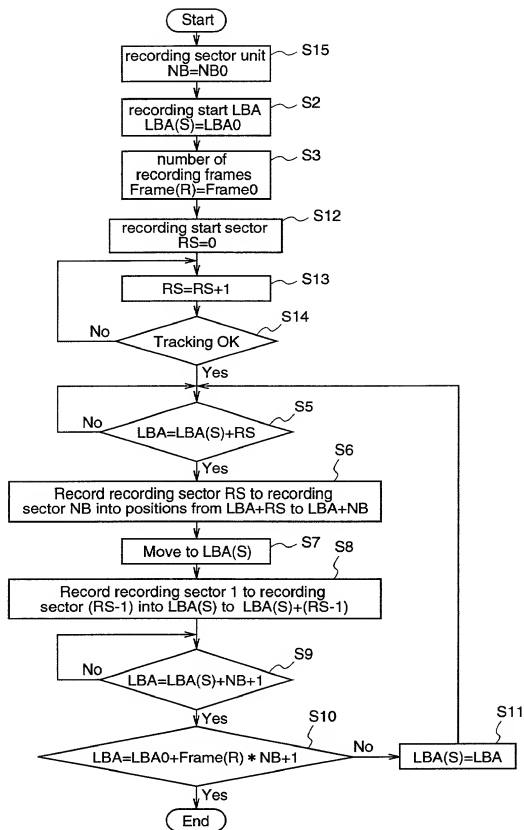


Fig.6(a)

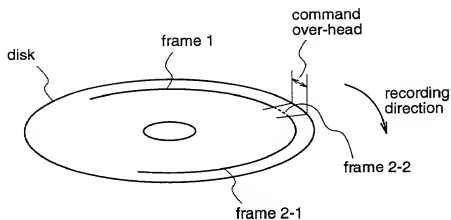
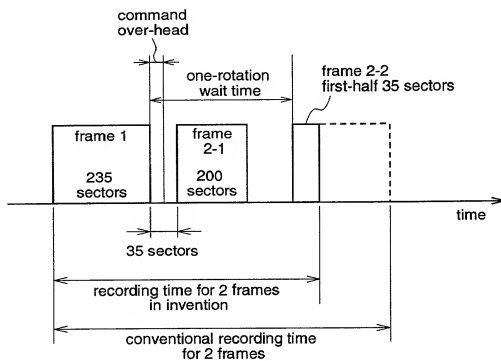


Fig.6(b)



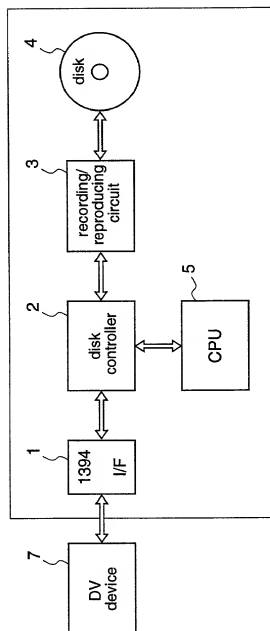


Fig.7

Fig.8

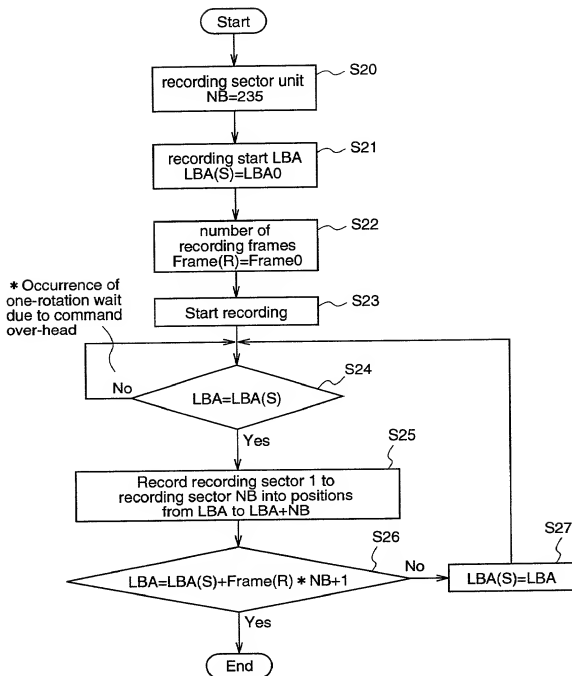


Fig.9(a)

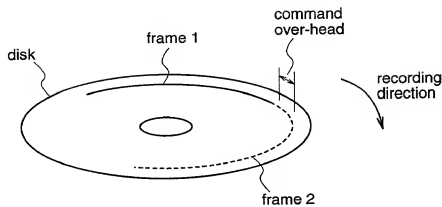
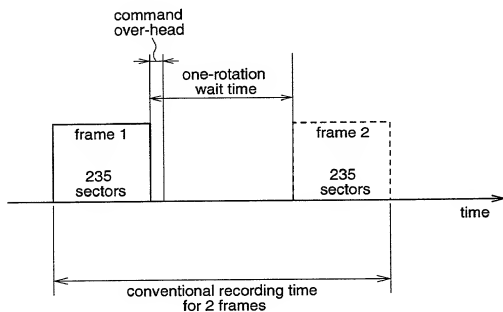


Fig.9(b)



DECLARATION AND POWER OF ATTORNEY FOR U.S. PATENT APPLICATION

() Original () Supplemental () Substitute (X) PCT () DESIGN

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Title: INFORMATION RECORDING/REPRODUCTION DEVICE AND INFORMATION RECORDING/REPRODUCTION METHOD

of which is described and claimed in:

() the attached specification, or
 () the specification in application Serial No. _____, filed _____, and with amendments through _____, or
 (X) the specification in International Application No. PCT/JP00/03628, filed June 2, 2000, and as amended on December 3, 2001 (if applicable).

I hereby state that I have reviewed and understand the content of the above-identified specification, including the claims, as amended by any amendment(s) referred to above.

I acknowledge my duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim priority benefits under Title 35, United States Code, §119 (and §172 if this application is for a Design) of any application(s) for patent or inventor's certificate listed below and have also identified below any application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NO.	DATE OF FILING	PRIORITY CLAIMED
Japan	11-155846	June 3, 1999	YES

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION SERIAL NO.	U.S. FILING DATE	STATUS: PATENTED, PENDING, ABANDONED

And I hereby appoint Michael R. Davis, Reg. No. 25,134; Matthew M. Jacob, Reg. No. 25,154; Warren M. Cheek, Jr., Reg. No. 33,367; Nils Pedersen, Reg. No. 33,145; Charles R. Watts, Reg. No. 33,142; and Michael S. Huppert, Reg. No. 40,268, who together constitute the firm of WENDEROTH, LIND & PONACK, L.L.P., as well as any other attorneys and agents associated with Customer No. 000513, to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith.

I hereby authorize the U.S. attorneys and agents named herein to accept and follow instructions from HAYASE & CO. as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and myself. In the event of a change in the persons from whom instructions may be taken, the U.S. attorneys named herein will be so notified by me.

I further declare that all statements made herein of my own knowledge are true, and that all statements on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

1st Inventor Eiji Masuda Date January 9, 2002
Eiji MASUDA
2nd Inventor _____ Date _____
3rd Inventor _____ Date _____
4th Inventor _____ Date _____
5th Inventor _____ Date _____
6th Inventor _____ Date _____

The above application may be more particularly identified as follows:

U.S. Application Serial No. NEW Filing Date December 3, 2001

Applicant Reference Number P-22977-02 Atty Docket No. 2001-1757A

Title of Invention INFORMATION RECORDING/REPRODUCTION DEVICE AND INFORMATION
RECORDING/REPRODUCTION METHOD

Direct Correspondence to Customer No:



000513

PATENT TRADEMARK OFFICE

Direct Telephone Calls to:

WENDERGATH, LIND & DONACK, L.L.P.
 2033 "K" Street, N.W., Suite 800
 Washington, D.C. 20006-1021

Phone (202) 721-8230
 Fax (202) 721-8250

Full Name of First Inventor	FAMILY NAME MASUDA	FIRST GIVEN NAME Eiji	SECOND GIVEN NAME
Residence & Citizenship	CITY Ehime	STATE OR COUNTRY Japan	COUNTRY OF CITIZENSHIP Japan JPX
Post Office Address	ADDRESS 1-10-14, Noda, Shigenobu-cho, Onsen-gun, Ehime	CITY	STATE OR COUNTRY 791-0216 Japan
Full Name of Second Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Third Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Fourth Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Fifth Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Sixth Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE